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| 10/538,057      | 06/09/2005  | Didier Quievry       | 4590-419            | 8447             |

33308 7590 12/22/2006  
LOWE HAUPTMAN GILMAN & BERNER, LLP  
1700 DIAGNOSTIC ROAD, SUITE 300  
ALEXANDRIA, VA 22314

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| EXAMINER |
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LE, HIEN

|          |              |
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| ART UNIT | PAPER NUMBER |
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3662

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 12/22/2006 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/538,057

Applicant(s)

QUIEVY, DIDIER

Examiner

Hien Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 0215839.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 06/09/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Priority***

Acknowledgement is made of applicant's claim for foreign priority based on an application filed in France on December 10, 2002. It is noted, however, that applicant has not filed a certified copy of the France application as required by 35 U.S.C. 119(b). In order to fully meet the requirement of 119(b) a translation of the foreign priority document is required. MPEP 2304.01(c).

Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted in reply to this action, 37 CFR 41.154 (b) and 41.202 (e). Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

### ***Drawings***

The drawings are objected to because of the following minor informalities:

- a) On figure 1, step K. The "square box" should be filled in the description as "Microwave selector"
- b) On figure 1, step M. The "square box" should be filled in the description as "Control signal".
- c) On figure 7, step K. The "square box" should be filled in the description as "Microwave selector"

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d) On figure 7, step M(p). The "square boxes" should be filled in the description as "An array of Sources".

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 are rejected under 35 U.S.C. 102(b) based upon a public use or sale of the invention. Erhage (U.S. Patent # 6,127,966).

Considering **claim 1**, Erhage discloses the limitations of a method for antenna calibration, in which:

- Closing a calibration circuit, the calibration circuit comprising an injection channel connected to a measurement channel via microwave the source to be calibrated. See FIG 5. " A test signal, generated by the controllable oscillator 49, is transmitted through the test antenna 45, to be received through the antenna unit 25 of the receiver" (column 11, line 57-60), and " at calibration during reception a test signal is transmitted from the test antenna 5 and received through the electrically controlled antenna...By measuring the phase and amplitude of the signal received through the electrically controlled

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antenna 1, it is thus possible to obtain information about the actual information about the actual phase-shifting and amplification of the module" (column 5, line 42-51).

- Injecting test signal through the source to be calibrated, the test signal being injected on the injection channel. " The test signal is then transmitted from the electrically controlled antenna and received through the test antenna 5" (column 5, line 58-60).

It is well known to one skill in the art that the electrically controlled antenna and the test antenna are explicitly known as the source and the injection channel. Therefore, Erhage successfully discloses all the limitations above.

- Measuring the phase  $\beta_m$  and amplitude  $A_m$  of the signal having passed through the source to be calibrated, the phase of the signal being measured on the measurement channel. " The radiation element 46 of the test antenna 45 now emits electromagnetic waves, which generate a signal  $b_2$  in the radiations element 29-I of T/R module No. i...The signal  $b_2$  can be obtained by a second complex amplification  $H_{ai}(f)$  of the signal  $b_1$  so that  $b_2 = H_{ai}(f)b_1$ " (column 12, 21-25).

It is well known to one skill in the art that signal  $b_2$  is certainly measured by phase and amplitude to participate in the equation  $b_2 = H_{ai}(f)b_1$  as  $b_1$  is formulated as  $b_1 = T^a K(f, T)b_o = T^a K(f, T)B \exp(j2\pi ft)$ . Therefore, Erhage successfully discloses the limitations listed above.

- Opening the calibration circuit is opening at the source to be calibrated, injecting the test signal on the injection channel, and measuring the phase  $\beta_f$  and the amplitude  $A_f$  of the signal present on the measurement channel. "The signal received through the antenna unit 25, which is received by the receiver 61 through the second signal input 67 of the receiver, is denoted  $b_3$  in FIG.5. The signal  $b_3$  only depends on the signal  $b_2$  generated in the radiation element 29-1 of T/R No. 27-1, since the other T/R modules 27-q are in the isolated mode and therefore, do not let any signals through...the signal  $b_3$  has a different amplitude and phase than the signal  $b_2$  and is obtained by the complex amplification at reception  $\Delta(f, t^{R(i)}, A_{COM})$  for T/R module No. 1 27-1 operating on the signal  $b_2$ " (column 12, line 43-53).
- Determining a corrected phase value  $\beta_c$ , this corrected phase being the phase of a complex number  $U_c$ , calculated from two complex numbers  $U_m$  and  $U_f$ , where:

$$U_m = A_m * \exp(i * \beta_m)$$

$$U_f = A_f * \exp(i * \beta_f)$$

See FIG.5. The value of signal  $b_0$  is calculated as  $b_0 = B * \exp(j2\pi ft)$ . Moreover,  $b_1$ , and  $b_2$  are calculated from the value of  $b_0$ . It also is well known to one skilled in the art that the value of sinusoidal signals can be formulated as amplitude multiplying the exponential complex phase. Therefore, Erhage explicitly discloses the limitations listed above.

Considering **claim 2**, Erhage discloses the limitations of a method for antenna calibration, in which the complex number  $U_c$  is given by the following equation:

$$U_c = U_m - \alpha U_l$$

Where  $\alpha$  is a complex coefficient correcting for the fluctuations over time in  $\beta_f$  and  $A_f$  between the measurements of  $\beta_m$  and  $A_m$ , on the one hand, and of  $\beta_f$  and  $A_f$ , on the other, this coefficient being equal to 1 in the absence of the correction." The signal  $b_3$  has a different amplitude and phase than the signal  $b_2$  and is obtained by the complex amplification at reception  $\Delta(f, t^{R(i)}, A_{COM})$  for T/R module No. 1 27-1 operating on the signal  $b_2$ " (column 12, line 49-53), " $\Delta(f, t^{R(i)}, A_{COM}) = {}^{R(i)}E(f, t^{R(i)}, A_{COM}) {}^{R(i)}A_{COM}$ " (column 12, line 64), and "A sufficient condition for the antenna system 23 to be calibrated for reception is, as will be understood by those skilled in the art that the complex error amplification at reception  ${}^{R(i)}E(f, t^{R(i)}, A_{COM})$  for T/R modules 27-1 is equal to one" (column 13, line 4-8).

Considering **claims 3 and 5**, Erhage discloses the limitations of a method for antenna calibration, in which a value of the corrected amplitude is determined, this corrected amplitude being the amplitude of the complex number  $U_c$ . "The absolute value of the complex amplification ratio at reception  $({}^{R(i)ME}G/f, t^{R(i)}, A_{COM})$  corresponds to the amplitude ratio between the signal  $b_3$  and the signal  $b_0$ . It is well known to one skill in the art that the different amplitude values between signal  $b_3$  and  $b_0$  can be calculated when the ratio between the signal  $b_3$  and  $b_0$  are determined. Therefore, Erhage successfully shows the limitations above.

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Considering **claim 4**, Erhage discloses the limitations of a method for antenna calibration, in which the complex coefficient  $\alpha$  is given by the following equation:

$$\alpha = U_r(t_1) / U_r(t_0)$$

Where  $U_r$  represents a measurement of the phase and of the amplitude of a reference signal, the measurement  $U_r(t_1)$  being concomitant with the measurement of  $U_m$ , and the measurement  $U_r(t_0)$  being concomitant with the measurement of  $U_f$ . " Let  $\beta_0(f)$  and  $\beta_3(f)$ , respectively denote the Fourier transforms of  $\beta_0(t)$  and  $\beta_3(t)$ , respectively. The complex amplification ratio at reception ( $R^{(i)ME}G/f, T^{R(i)}$ ,  $A_{COM}$ ) for T/R module No. 1 can then, as will be understood by the person skilled in the art, be obtained as the ration between the two Fourier transforms  $\beta_0(f)$  and  $\beta_3(f)$ , so that:

$$(R^{(i)ME}G/f, T^{R(i)}, A_{COM}) = \beta_3(f) / \beta_0(f) \text{ " (column 17, line 15-25)}$$

It is well known to one skill in the art that the complex amplification ratio reception can be calculated by the equation of time if we change the Fourier transform to Laplace transform. Therefore, Erhage also successfully discloses all shown limitations above.

### **Conclusion**

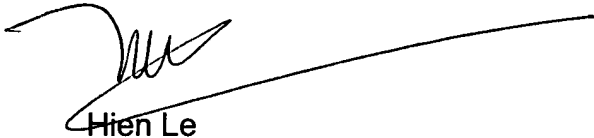
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Le whose telephone number is 571-270-1326. The examiner can normally be reached on M-F: 7:30am- 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrell McKinnon can be reached on 571-272-4797. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

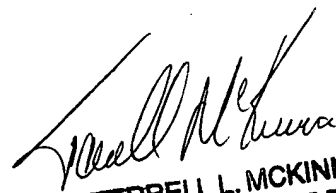
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Patent Examiner



Hien Le

December 7, 2006



TERRELL L. MCKINNON  
SUPERVISORY PATENT EXAMINER